

PGPUB-DOCUMENT-NUMBER: 20010049181
DOCUMENT-IDENTIFIER: US 20010049181 A1
TITLE: PLASMA TREATMENT FOR COOPER OXIDE REDUCTION

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DETX:

[0023] In an integrated circuit (IC) fabrication, a metal layer is deposited at some point in the deposition process and typically comprises aluminum or copper. Because copper is being considered for the conducting material, much of the discussion herein is addressed to copper. However, the present invention may be used for any oxidized metal layers, such as Ti, TiN, Ta, TaN, Al, and others. It may also be used for other layers, including silicon oxides. The present invention combines the chemical reactive cleaning of a reducing agent, such as a compound containing nitrogen and hydrogen, including ammonia, with the physical bombardment of the ions from a plasma, and so may be used on a variety of materials to effectuate the reduction of contaminants, such as oxides. While oxides are clearly discussed in the specification, other contaminants would fall within the scope of the present invention. It is believed that the nitrogen combined with hydrogen allows a reduced energy level to break the hydrogen bonds and otherwise disassociate the molecules and more effectively utilize the reducing agent to clean the contaminants.

Details

Text

Image

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